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REVISED REMEDIAL ACTION ORDER (PUBLIC DOCUMENT)
01/07/1988
DTSC - BERKELEY, CA

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STATE OF CALIFORNIA--HEALTH AND WELFARE AGENCY
DEPARTMENT OF HEALTH SERVICES
2151 BERKELEY WAY
BERKELEY, CA 94704

January 7, 1988

Captain Thomas Vought
USN Commanding Officer
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, CA 94103-5018

Dear Captain Vought:

RE: Remedial Action Order - Hunters Point Naval Shipyard

Enclosed is a revised version of the subject Remedial Action Order which was sent to you under cover letter dated December 10, 1987. You will note that Sections 6.9 and 6.10 on page 40 have been modified. In addition, a new Section, Section 5.9, has been added.

If you have any questions or comments, please contact Chein Kao of my staff at (415) 540-3052.

Sincerely,

for

Dwight Hoenig, Chief
North Coast California Section
Toxic Substances Control Division

Enclosure

cc: Captain T. G. Krumm
Ms. Alison Ling
Mr. Alex Dong
Mr. Roger James
Mr. Dave Wells
Mr. Dave Willis
Mr. Steve Castleman
Mr. Keith Takata
Mr. Scott B. Lutz

STATE OF CALIFORNIA

HEALTH AND WELFARE AGENCY

DEPARTMENT OF HEALTH SERVICES

In the matter of:	Docket No. HSA87/88-034RA
Hunters Point Naval Shipyard	REMEDIAL ACTION ORDER
San Francisco, CA	Health and Safety Code Sections 205, 206, and 25355.5(a) (1)

To: United States Department of the Navy; Triple A Machine Shop, Inc., a California Corporation; Albert O. Engel, an individual and Chief Executive Officer and Director of Triple A Machine Shop Inc.; Susan J. Alonso, an individual and Secretary of Triple A Machine Shop Inc.; Dennis Wong, an individual and Chief Financial Officer of Triple A Machine Shop Inc.

I

INTRODUCTION

The California Department of Health Services ("Department") issues this Remedial Action Order to the above named Respondents pursuant to California Health and Safety Code (H&SC) Sections 205, 206, and 25355.5(a)(1). The Department has determined that there have been releases or threatened releases of hazardous substances at the above named site within the meaning of the Hazardous Substance Account Act (H&SC Sections 25300, et seq.) These releases also constitute a public nuisance as defined in Civil Code Sections 3479 and 3480.

II

FINDINGS OF FACT

2.1. Site Description. The Hunters Point Naval Shipyard (the "Site") which is the subject of this Remedial Action Order ("Order") is located on and adjacent to the San Francisco Bay in the southeast corner of the city of San Francisco. The Site encompasses approximately 964 acres, 450 acres of which are submerged by the San Francisco Bay. A map showing the location of the Site is attached as Exhibit A.

2.2. Site Ownership. The Site is owned by the United States Department of the Navy ("the Navy") on behalf of the United States.

2.3. Site History Prior to July 1, 1976. In 1869, a commercial ship repair facility was established at the Site. In 1939, the Navy purchased the Site and subsequently developed it as an annex to the Navy Yard at Mare Island. In 1945, the Site became a separate Naval Shipyard until it was decommissioned in 1974.

2.4. Site History From July 1, 1976 To The Present Time. Beginning on July 1, 1976 and ending on June 30, 1986, Triple A Machine Shop Incorporated ("Triple A") leased the Site from the Navy. However, Triple A did not vacate the Site until March, 1987. Triple A used drydocks, adjacent berths, machine shops, power plants, various offices, and warehouses for the purpose of repairing commercial and Naval vessels. Triple A also subleased part of the Site to other small businesses. Currently, some of

these small businesses continue to occupy various areas of the Site under a special agreement with the Navy.

2.5. Generation of Hazardous Substances Prior to July 1, 1976. Prior to July 1, 1976, the Navy generated hazardous substances during the normal course of shipyard work. The hazardous substances or wastes which were generated include spent acids, spent solvents, radium dials, paint sludges, spent blasting grit and waste oil. The activities which resulted in the generation of these hazardous substances are listed in the Navy's Initial Assessment Study (October, 1984). A copy of this list is attached herein as Exhibit B.

2.6. Storage and Disposal of Hazardous Substances Prior to July 1, 1976. Prior to July 1, 1976, the Navy stored and disposed hazardous substances at the Site. Some of these hazardous substances are known to have been released or disposed in the following areas:

a. Oil Reclamation Ponds

b. Industrial Landfill

c. Scrap Yard

d. Old Transformer Storage Yard

e. Power Plant Near Building 521

f. Pickling and Plate Yard

g. Bay Fill Area

h. Tank Farm

i. Battery and Electroplating Shop

j. Sub-base Sand Blast Fill and Painting Area

k. Bay Sediments

Each of these areas is briefly described below. The locations of these areas are also shown on Exhibit A.

2.6.1. Oil Reclamation Ponds. Two unlined man-made ponds with a combined capacity of 9,000 barrels were constructed in 1944 in bay fill material within 30 feet of Bay waters. They were used to receive oily wastes from ships in dry dock or berth, shipyard shop operations, and from other Naval installations in the Bay area. In 1974, these ponds were filled-in and surface structures were removed. The Navy has reported in their Initial Assessment Study (October, 1984) that oily wastes that were stored in these ponds are contaminated with solvents, caustic soda, ethylene glycol, and dichromates. The Navy also reported in their Confirmation Study/Verification Step Report (March 19, 1987) that contaminants such as polychlorinated biphenyls (PCBs), chlorinated benzenes, and ethylbenzene have also been detected in soil samples collected from where these ponds were located. The Navy's Initial Assessment Study concluded that "the oily waste contaminants may migrate into the Bay via the ground water system".

2.6.2. Industrial Landfill. From 1958 to 1974, the south bay shore area of the shipyard was used as an industrial landfill. Records show that little control was placed on the disposal of either solid wastes or liquid chemical materials in this landfill.

According to the Navy's Initial Assessment Study, a total of about 1,000,000 cubic yards of solid wastes, 21,000 gallons of liquid chemical wastes, 500 cubic yards of asbestos, and 6,000 pounds of dials coated with flourescent radium were disposed in this landfill. The Navy has reported in their Confirmation Study that trichloroethylene (TCE), trichloroethane (TCA), toluene, ethylbenzene and PCBs exist in soil and ground water in this area. The area is located in fill material and is adjacent to the Bay. The Navy's Initial Assessment Study concluded that "the potential for contaminants to leach into the soil and ground water and subsequently migrate toward the Bay is high".

2.6.3. Scrap Yard. The scrap yard is located east of the industrial landfill. The area is mostly unpaved and has been in use since 1954. The Navy's Initial Assessment Study estimated that 7,000 pounds of lead and copper and 250 gallons of oil containing PCBs were spilled in this area during the storing and crushing of battery and electrical capacitors. PCBs and heavy metals have been randomly detected in the soil in the area. The Initial Assessment Study conducted by the Navy indicates that this area is also in fill material and that contaminants can percolate into underlying ground water. The study

concluded that "the migration of contaminants towards the Bay is highly probable".

2.6.4. Old Transformer Storage Yard. The Old Transformer Storage Yard is an unpaved area 400 feet north of Building 704. It was used to store electrical transformers from 1946 to 1974. PCBs were found in soil samples collected in this yard. the presence of PCBs in this area may be due to the storage of old leaking transformers.

2.6.5. Power Plant near Building 521 The Power Plant is located on the northeast side of J street at Mahan street. About 500 pounds of asbestos used to insulate various pipes and equipments were left in this area. Other battery acids and chemical containers were also found in the power plant yard.

2.6.6. Pickling and Plate Yard. The steel pickling yard is located at Building 411. It consists of acid storage tanks, open brick lined pits for dipping of large steel plates, and open plate storage racks. Chemicals which were used at this yard included zinc chromate primer, sulfuric acids, sodium dichromate, and resin thinners. The metal surface finishing process generated metal-contaminated rinse water and sludge which was spilled onto the floor or the sides of the pits from time-to-time. Samples taken from the sludge, acid sump, and paint residue by the Navy revealed that high concentrations of heavy metals

exist on the surface of these structures. The Navy's Initial Assessment Study indicates that "a threat to human health may exist for those that come in contact with the chemical residues left on-site".

2.6.7. Bay Fill Area. The area southwest of J street is a large fill area of about 40 acres along the shore line. The Navy has estimated that about half of the 85,500 tons of sand blast waste generated over the years were disposed in this area. Sand blasting waste characteristically may contain heavy metals such as copper, lead, and nickel etc. Limited soil samples collected by the Navy indicate that soil in this area is contaminated with TCA and TCE.

2.6.8. Tank Farm. The tank farm is located in the northern part of the yard near Building 111 and 112. It consists of one steel tank with a capacity of 4384 barrels and nine steel tanks each with a capacity of 286 barrels. Except for one tank which is used to store lube oil, these tanks are being used to store diesel oil. One 286-barrel tank is known to have ruptured in 1944 resulting in spillage of its entire contents. Although the spill was partially cleaned-up, visibly stained soil which is moist and has a strong petro-chemical odor still exists in this area.

2.6.9. Battery and Electroplating Shop. Waste acids

contaminated with lead and copper were often spilled onto the floor of the battery and electroplating shop during battery retrofitting operations in Building 123. The Navy's Initial Assessment Study estimated that a total of 10,000 gallons of metal contaminated acids were spilled onto the floor and dock loading area. Samples of floor-scrapings collected from the shop show high levels of lead and copper. A plating shop was also located in Building 123. Acids, chromates, and heavy metals from the plating operation were discharged through the storm sewer system to the Bay. The Navy's Initial Assessment Study estimated that approximately 1,500 gallons of spent electrolyte generated over the years was spilled on the floor. Some of these hazardous metals may still be deposited on the floor of the building and, if disturbed, could become airborne as particulates. Such particulates could pose an occupational health threat to workers in the building.

2.6.10. Sub-base Sand Blast Fill and Painting Area. This area is located on the northern edge of the shipyard, adjacent to the Bay and on the northeast side of Donohue Street. This area was in operation from 1961 to 1974 and served as a sand blasting and painting area for submarine superstructures. The Navy has reported in their Initial Assessment Study that there

is evidence of zinc chromate-based paint spills and fuel contamination from painting of submarine fuel lines in this area. The sandblast waste was placed in the fill area north of Building 146 and 117. The Navy's Confirmation Study indicates soil is contaminated with heavy metals in this area.

2.6.11. Bay Sediments Industrial shop wastewater was routinely discharged to a storm sewer. During heavy rains, wastewater overflowed the bypass structure and discharged to the Bay. Sand blasting grit, paint scrapings, and metal rust from sand blasting operations were also directly discharged to the bay.

2.7. Generation, Storage, and Disposal of Hazardous Substances and Wastes After July 1, 1976. From July 1, 1976 until March, 1987, Triple A occupied the Site for the purpose of repairing commercial and Naval vessels. Activities conducted by Triple A which resulted in the generation of hazardous substances and wastes consisted of: (1) removing hazardous substances and wastes, such as waste oil and contaminated bilge water, from ships under repair; (2) construction, demolition, or renovation of buildings at the Site which involved disposal of asbestos lagging materials and electric capacitors and transformers containing PCB oil; and (3) ship repairing which generated metal-containing sand blast fines, waste paint, and spent solvents.

2.7.1. Allegations of Disposal of Hazardous Substances by Triple A. In "Exhibits to People's Memorandum of Points and

Authorities in Support of Temporary Restraining Order and Order to Show Cause", San Francisco Superior Court Case No. 876959, a number of witnesses signed declarations that allege illegal storage and disposal of hazardous substances by Triple A. In an affidavit in support of a search warrant, Olivia Perreault, an investigator for the Consumer and Environmental Protection Unit of the San Francisco District Attorney's Office, stated that she interviewed Lt. Scott Leroy, a Safety Officer of the Navy responsible for overseeing ship repair for the Navy at Hunters Point. Lt. Leroy informed Ms. Perreault that he had received training from the Navy Safety School which included training on compliance with environmental regulations. Lt. Leroy recounted to Ms. Perreault many assertions concerning his own and the Navy's beliefs and observations about Triple A's activities at the Site. In a declaration, Mr. William Troy Hord, a former Ship Superintendent for Triple A Machine Shop and an ex-Captain of the Hunters Point Fire Department, also stated that miscellaneous wastes from the shipyard were often disposed at various sites around the Hunters Point Site. Examples of these allegations are paraphrased below.

(Perreault): On April 2, 1986, Lt. Leroy discovered two newly created oily wastewater/sludge ponds located between J Street and Homaja Lane, west of Building 521. These ponds were filled with oily waste water by a 2 1/2 inch Triple A hose from a pumping manifold at the oil tank berm surrounding Tank S-505. He climbed into the tank berm and noted that oily water was flooding the south end of the berm and

the southeast slice channeling gate valve was unlocked, unchained and open and effluent was flowing at a moderate rate into the berm (area). A black hose, labelled "Triple A Shipyard, Inc." was secured at the top of the oil tank with one end inside the oil tank. Lt. Leroy further stated that he regularly "sounded" the volume of liquid stored in Tank S-505 and that the volume of liquid stored there fluctuated, indicating on-going pumping of liquid into and out of that tank by Triple A.

(Hord): Waste oil and bilge water from ships being repaired would be removed from the ships into either Baker tanks located next to the berths or directly into a vacuum truck. In addition to the waste petroleum products, other wastes such as waste solvents would also be placed into the Baker tanks or vacuum truck. The Baker tank would then be pumped out by a vacuum truck when it became full, and the contents of the vacuum truck was pumped into a large white tank (S-505) located on J Street, which stored these waste liquids for Triple A. In addition, there is a steam line that runs from Drydock No.4 to the old power plant which is located across the street from the oil storage tank previously mentioned (S-505). The steam pipe at one point was diverted so that there would be a pipeline directly connecting Drydock 4 to the large white oil storage tank. When Drydock 4 contained large ships with a large volume of waste liquids, such as a tanker containing waste crude oil, this steam line would be used to pump the contents of the

ship from Drydock 4 directly into the oil storage tank. Triple A personnel allowed the waste petroleum products to remain in the tank, and the contents would stratify. It was then the practice at Triple A to drain the tank of the water portion of the separation and dump the water on the ground. This dumping took place all along the beach line from the white oil storage tank (S-505) up along the beach front past Building 600. In addition, this material would also be dumped in fields located between the old power station and the gymnasium, located between J Street, H Street, Mahan Street and Manseau Street. Normally, the procedure would be that the water would either be let out of the oil storage tank directly or would be pumped into a vacuum truck and then dumped from the vacuum truck onto the ground. Triple A operators were told to continue to let the water run out of the vacuum trucks until oil could be visibly seen to be pouring out. At that point they were directed to shut off the valves and stop the flow. Inevitably, however, oil and other wastes mixed with the water would be dumped onto the ground along with it.

A declaration made by Mr. James McCammon, an Associate Hazardous Materials Specialist for the Toxic Substances Control Division of the California Department of Health Services (DHS), concerning this area also indicated that:

(McCammon): "On July 17, 1987, in response to a complaint from the U.S. Navy alleging illegal dumping of hazardous waste, I visited the ex-Hunters Point Naval Shipyard

facility operated by Triple A Machine Shop, Inc. ... On July 17, 1987, I made the following observations: ... A tank identified as Tank S-505 located near the corner of J Street and Mahan Street appeared to have been used to store waste oil. In the center of the containment berm surrounding tank S-505, there was a large patch of oil sludge. Lt. Leroy dug a shallow trench in the center of this patch of sludge, and I took a sample of the soil near the bottom of the trench and the undisturbed sludge on the surface nearby; I also took a sample of the oil being stored in Tank S-505. ... In an area adjacent to Tank S-505 it appeared that oily waste had been pumped from the tank across the road, dumped on the ground and covered with sand and soil. Lt. Leroy dug a trench down past the layer of blackened soil and I took a sample from that trench, and from the soil where the piping ran out of the berm from the tank. ... The oil sample taken from inside of Tank S-505 was determined (by the DHS Hazardous Materials Laboratory) to contain 250 parts per million (ppm) of PCBs, approximately 50 times the concentration above which waste PCB liquids are considered to be hazardous waste under Title 22, Section 66699(c) (of the California Administrative Code). The sample of the sludge taken from the ground within the containment area surrounding Tank S-505 contained 220 ppm of PCBs, approximately 44 times the concentration above which waste PCB liquids are considered to be hazardous waste under Title 22."

Other alleged illegal storage and disposal of hazardous substances by Triple A are also presented in the court papers. Examples of these allegations are paraphrased below.

(Perreault): On April 2, 1986, Lt. Leroy witnessed a Triple A tank truck discharging oily waste onto the ground at a site Southwest of H Street, formerly Building 506. He was told by a Triple A employee that the oily waste came from a Triple A holding tank.

(Perreault): On April 22, 1986, Lt. Leroy and Mr. Donald Brown (Lease Administrator of the Navy), witnessed a Triple A employee disposing of barrels on a site adjacent to Building 526, northeast of H Street. One of the barrels had "PCB" written on it. Lt. Leroy subsequently made a survey of the property leased to Triple A to inventory Triple A's disposal practices. The result of this survey is a list of nineteen (19) areas that may be contaminated by hazardous substances (see Exhibit C).

(Perreault): On August 6, 1986, Lt. Leroy observed oily residue deposits at an open area south southwest of K Street and east southeast of Building 600. He took samples of the soil there and experienced a skin rash...

(Hord): On numerous occasions, waste liquids which may have consisted of oils, solvents, paint wastes and other materials were sprinkled on the ground north of Building 600, near the baseball diamond area by use of vacuum truck. Often times, such liquids would be disposed of late in the day. After waiting until the next day, the brush in those

areas would be set on fire so as to burn off the flammable liquids that had been dumped on the ground.

(Hord): During a two-month shipyard-wide strike in 1983, The scavenger company (previously hired by Triple A to remove waste asbestos and other wastes) would not cross the picket lines to remove waste products from the shipyard. At that time, Philip Esparza, the operator of Black Top Services which operates on the Hunters Point facility, used a bulldozer to dig a large trench. I estimate that the trench was 3 yards deep, ten yards wide and approximately 30 yards long. This trench was located near the corner of 6th Avenue and J Street on the Hunters Point facility, between a railroad track on the southwest end and the fence surrounding the scrap yard. All manner of wastes were dumped into this trench over an approximately two-month period. In addition to solid wastes from ship repair and building maintenance, liquid wastes (such as corrosive solutions, chlorinated solvents, lead base paints, and paint sludges) were dumped into this trench. ... Mr. Hord estimated that ... approximately 2,000 gallons of liquid wastes were dumped into the trench.

2.8. Other Releases of Hazardous Substances. Other releases of hazardous substances at the Site which have not been previously discussed in this Order are described below.

2.8.1. PCB Contaminated Area Near Building 503. In September, 1986, a previously unknown PCB-contaminated area was unearthed during construction work near

Building 503. Initial results showed PCB concentrations as high as 910 ppm in the soil samples. Since then, the Navy has implemented source removal action to remove soil with PCB concentrations higher than 25 ppm.

2.8.2. Sub-base Sand Blast Fill Area. The westernmost subarea of the Sub-Base Sand Blasting and Painting area is an irregularly shaped section bordered by the Bay to the north, the Sub-base Sand Blasting Fill area to the east, Donahue Street to the southeast, a parking area to the southwest, and the Hunters Point Naval Shipyard property line to the northwest. In addition to heavy metal contamination of soil in this area as described in 2.6.10., limited soil samples indicate that the soil is also contaminated with aromatic hydrocarbons.

2.9. Hazardous Substances Found at the Site. Since 1983, the Navy has been investigating the Site to determine the nature and extent of the contamination which resulted from past releases of hazardous substances. These investigations indicate that soil and ground water at the Site are contaminated with hazardous substances and contain constituents which may have adverse impacts on public health and the environment. The highest concentrations of selected hazardous substances detected in soil or ground water at selected locations are listed below in Table 1 and Table 2. This list is not an exhaustive list of all the hazardous substances which may be present at the Site. Other hazardous substances detected at the Site are reported in Navy's "Confirmation Study/Verification Step Report (March 19, 1987)"

and the Navy's "Area Study for Asbestos Containing Material and Organic and Inorganic Soil Contamination (July 2, 1987)".

Table 1. Selected Hazardous Substances Detected in Soil Samples at Selected Locations

Hazardous Substances	Highest Concentration Detected (in ppm)	Location of Sample
TCE	15	Bay Fill Area (BL)
PCE	620	Bay Fill Area (BL)
1,1-DCA	20	Bay Fill Area (BL)
TCA	44	Bay Fill Area (BL)
Benzene	0.3	Oil Reclamation Pond (O-A)
Toluene	16	Industrial Landfill (I-5)
Xylene	42	Industrial Landfill (I-5)
Ethylbenzene	12	Industrial Landfill (I-5)
Chlorobenzene	6	Oil Reclamation Pond (O-A)
1,2-Dichlorobenzene	110	Oil Reclamation Pond (O-A)
1,3-Dichlorobenzene	92	Oil Reclamation Pond (O-A)
1,4-Dichlorobenzene	70	Oil Reclamation Pond (O-A)
PCBs	460.5	Study Area A1 (AE4-12)
Naphthalene	84	Industrial Landfill (I-5)
Chromium	55,000	Pickling and Plate Yard (RES-1)
Lead	52,000	Industrial Landfill (I-9)
Mercury	6.1	Industrial Landfill (I-5)
Cadmium	150	Battery and Electric Shop (BES-1)
Nickel	1,100	Sub-base Sand Blast (S-C)
Copper	6,300	Industrial Landfill (I-4)
Asbestos	34%	Scrap Yard (SYG)

Table 2. Selected Hazardous Substances Detected in Groundwater Samples at Selected Locations

Hazardous Substances	Highest Concentration Detected (in ppb)	Location of Sample*
TCE	3	Industrial Landfill (I-4)
Benzene	29	Industrial Landfill (I-4)
Toluene	50	Industrial Landfill (I-4)
Xylene	35	Oil Reclamation Pond(O-3)
Ethylbenzene	13	Industrial Landfill (I-3)
Chlorobenzene	198	Oil Reclamation Pond(O-3)
1,2-Dichlorobenzene	49	Industrial Landfill (I-4)
1,3-Dichlorobenzene	33	Industrial Landfill (I-4)
1,4-Dichlorobenzene	90	Oil Reclamation Pond(O-3)
Vinyl Chloride	57	Oil Reclamation Pond(O-2)
Naphthalene	290	Oil Reclamation Pond(O-3)

* Water samples taken from beneath these locations.

The health risks associated with these substances are described in Exhibit D.

2.10. Population at Risk. Approximately 1,500 workers employed by the Navy and private companies work at the Site. The Site also contains restaurants and other commercial establishments which are frequented by the public. In addition, there is a residential area immediately adjacent to and west of the Site.

2.11. Environment at Risk. As described in the Water Quality Control Plan for the San Francisco Bay Basin, adopted by the RWQCB on December 12, 1986, the existing and potential beneficial uses of the ground water and surface waters underlying and adjacent to the Hunters Point Naval Shipyard may include:

a. Industrial process water supply
b. Industrial service water supply
c. Navigation
d. Water contact recreation
e. Non-contact water recreation
f. Ocean commercial and sport fishing
g. Wildlife habitat
h. Preservation of rare and endangered species
i. Fish migration
j. Fish spawning
k. Shellfish harvesting
l. Estuaries habitat

2.12. Exposure Pathways. Hazardous substances and constituents have been detected in soil and ground water at the Site. These hazardous substances may migrate or may continue to migrate off-site and expose humans and/or the flora and fauna through four possible exposure pathways. These pathways are described as follows:

2.11.1. Ground Water. Hazardous substances and constituents have migrated into and contaminated ground water underlying the Site and may have adverse impacts to beneficial uses of the water of the State. These substances may migrate or may be migrating off-site and into the Bay.

2.11.2. Air. Potential releases of hazardous substances from the Site to the air may occur. Exposure to air contaminants could result from inhalation.

2.11.3. Soil. Dermal contact with or ingestion of contaminated surface soil may result in exposure to hazardous substances.

2.11.4. Surface Water. Hazardous substances and constituents may migrate or may continue to migrate from the Site into the Bay. Such migration causes or threatens to cause a condition of pollution in the Bay, which may adversely affect beneficial uses. Direct contact with, or ingestion of, surface water

or polluted flora or fauna, may result in human exposure to these pollutants.

III

CONCLUSIONS OF LAW

3.1. The substances, as described above, found on-site are "hazardous substances" as defined by Health and Safety Code Section 25316.

3.2. Respondents are responsible parties as defined by Health and Safety Code Sections 25319, 25360, and 25385.1(g).

3.3 Pursuant to the Superfund Amendments and Reauthorization Act (SARA) of 1986 (42 U.S.C. 9620(a)(4)),State laws concerning removal and remedial actions, including State laws regarding enforcement, shall apply to removal and remedial actions at the Site.

3.4. This order complies with the requirements of Health and Safety Code Section 25355.5(a)(1).

3.5. The past, present, and potential migration of hazardous substances from the Site into the air, soil, surface water, and ground water constitutes an actual or threatened "release" as defined in Health and Safety Code Section 25320.

3.6. Conditions at the Site constitute a nuisance which is injurious to health or offensive to the senses.

IV

DETERMINATIONS

Based on the foregoing Findings of Fact and Conclusions of Law, the Department has determined that:

4.1. Respondents are responsible parties who are required to take the actions ordered below to protect the public health and safety and the environment.

4.2. The remedial actions set forth in this Order are necessary to respond to releases or threatened releases of hazardous substances from the Site.

4.3. The remedial actions set forth in this Order are necessary to enjoin and abate a nuisance dangerous to health. Respondents' failure to perform these remedial actions shall result in the Department's commencing and maintaining all proper and necessary actions or proceedings to abate this public nuisance.

V

ORDER

5.1. It is hereby ordered that Respondents perform the following acts in the manner and by the dates specified herein. All work undertaken pursuant to this Order shall be performed in a manner consistent with, at a minimum, the California Health and Safety Code; the California Administrative Code, Title 22; the

Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), as amended; and the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), Title 40, Code of Federal Regulations (CFR), Part 300, as amended.

5.2 Within 30 days of the effective date of this Order, respondents shall submit a Scoping Document as described below.

5.2.1 Scoping Document. A Scoping Document shall be prepared which consists of an evaluation of existing data, identification of Remedial Investigation objectives, identification of general response objectives for the Feasibility Study, and identification of data needs and investigation tasks for the Remedial Investigation and Feasibility Study. The Scoping Document shall specifically describe or include the following items:

(a) site characteristics with map;

(b) waste characteristics, including;

(1) a list of all hazardous wastes and hazardous substances which were disposed, discharged, spilled, treated, stored, transferred, transported, handled or used at the Site, including a description of their estimated volumes, concentrations, and characteristics;

(2) a description of all operations which are or were related to each hazardous substance, material, or waste, or which produced any hazardous waste; and

(3) past disposal practices

(c) a map at an appropriate scale which shows the locations of all known or suspected areas where releases of hazardous substances have or may have occurred.

(d) all existing data, including a summary of all air, soil, surface water, and groundwater data and QA/QC procedures followed during this sampling and analysis;

(e) nature and extent of problem, including a summary of the actual and potential on-site and off-site health and environmental effects;

(f) previous remedial response efforts;

(g) identification of general response actions;

(h) data gaps;

(i) recommendations for additional work needed to eliminate data gaps.

5.3. RI/FS Workplan Submission. Within 60 calendar days of the effective date of approval by the Department of the Scoping Document, respondents shall submit to the Department for review and approval an RI/FS Workplan which addresses all the activities necessary to conduct a complete Remedial Investigation (RI) and Feasibility Study (FS) of the Site and any areas where there is a release or threatened release of hazardous substances from the Site.

5.3.1. Guidance Documents All work performed under this order shall be conducted in accordance with the following guidance documents:

(a) U.S. Environmental Protection Agency's ("EPA") "Guidance on Remedial Investigations Under CERCLA", dated June 1985.

(b) EPA's "Guidance on Feasibility Studies Under CERCLA", dated June 1985.

(c) EPA's "Guidance Document QAMS-005", dated December 1980.

(d) EPA's "Superfund Public Health Evaluation Manual", dated October 1986.

(e) EPA's "Superfund Remedial Design and Remedial Action Guidance", dated June 1986.

(f) "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods", SW-846 3rd edition 1987.

(g) EPA's "Community Relations in Superfund: A Handbook", dated March 1986.

(h) Hazardous Waste Operations and Emergency Response, 29,CFR, Part 1910.120, dated December 1986.

(i) "Preparation of a U.S. EPA Region IX Sample Plan", dated November 1986.

(j) EPA's "Data Quality Objectives for Remedial Response Activities", dated March 1987.

5.3.2. RI/FS Objectives. The objectives of the RI/FS are to:

(a) Determine the nature and full extent of contamination of air, soil, surface water and ground water at the Site and contamination from the site affecting adjacent areas;

(b) Identify all existing and potential migration pathways, including the direction, rate and dispersion of contaminant migration;

(c) Determine the magnitude and probability of actual or potential harm to public health or welfare or to the environment by the threatened or actual release of hazardous substances at the Site;

(d) Identify and evaluate appropriate remedial actions to prevent or minimize future releases and mitigate any releases which have already occurred; and

(e) Collect and evaluate the information necessary to prepare a remedial action plan in accordance with the requirements of Health and Safety Code Section 25356.1.

5.3.3. RI/FS Workplan(s). The RI/FS Workplan(s) shall address, at a minimum, each of the following elements:

(a) Project Management Plan

(b) Sampling Plan

(c) Past Data Validation

(d) Quality Assurance/Quality Control Plan

(e) Data Management Plan

(f) Health and Safety Plan

(g) Public Health and Environmental Evaluation Plan

(h) Feasibility Study Plan

(i) Schedule

5.3.3.1. Project Management Plan. A Project Management Plan shall be prepared by the Respondents which describes how the project will be managed by the Respondents and their contractors, subcontractors, and consultants. It shall include an organization chart with the names, titles, and resume of key personnel and a description of their individual responsibilities.

5.3.3.2. Sampling Plan. A Sampling Plan shall be prepared by the Respondents which describes the activities which will be undertaken to develop a complete profile of on-site and off-site air, soil, surface water and ground water contamination attributable to operations and activities at the facility. The plan shall reference and utilize the guidance document, "Preparation of a U.S. EPA Region 9 Sample Plan", and shall at a minimum describe or include the following items:

(1) investigation objectives;

(2) site background;

(3) A summary analysis of existing air, soil, ground water and surface water data, including the rationale for the locations and types of analyses previously conducted;

(4) chemical parameters of interest

(5) sample types;

(6) map of locations to be sampled;

(7) sample locations and frequency;

(8) engineering specifications for all sampling installations such as ground water monitoring wells, soil borings, and piezometers;

(9) analytical procedures;

(10) provisions for gaining access to and obtaining samples from adjacent properties, where appropriate; and

(11) operational plan and schedule.

5.3.3.3. Past Data Validation. Past data which the Respondents believe was generated in accordance with EPA QA/QC requirements (EPA's Guidance Document QAMS-005 dated December 1980) shall be validated. If this validation cannot be documented, a representative number of samples should be collected and analyzed to verify past results.

5.3.3.4. Quality Assurance/Quality Control Plan. A Quality Assurance/Quality Control (QA/QC) Plan shall be prepared by the Respondents which describes the procedures for the collection, preservation, and transport of samples; the calibration and maintenance of instruments; and the processing, verification, storage, and reporting of the data. The plan shall be prepared in accordance with EPA Guidance Document QAMS-005 and shall specifically describe:

(a) sample identification procedures;

(b) sample preservation procedures;

(c) chain-of-custody procedures;

(d) EPA and Department approved analytical methods

which may used; and

(e) the certified laboratory or laboratories which will perform the analyses.

5.3.3.5. Data Management Plan. A Data Management Plan shall be prepared by the Respondents which describes how all technical data will be managed and preserved in accordance with paragraph 6.16.

5.3.3.6. Health and Safety Plan. A Health and Safety Plan shall be prepared by the Respondents which describes the specific personnel, procedures and equipment to be used during field activities to protect the health and safety of the investigative team and the general public from exposure to hazardous wastes or hazardous substances. The plan shall be prepared in accordance with 29 CFR, Part 1910.120, "Hazardous Waste Operations and Emergency Response", and DHS "Site Safety Plan Outline and Guidance for Site Assessment or Site Mitigation Projects " (see Exhibit E).

5.3.3.7. Public Health and Environmental Evaluation Plan. A public Health and Environmental Evaluation Plan shall be prepared by the Respondents which describes how the magnitude and probability of actual or potential harm to public health or welfare or the environment by the threatened or actual release of a hazardous substance or hazardous waste will be determined. The Public Health and Environmental Evaluation Plan shall evaluate existing data, identify data gaps, and recommend additional work needed to identify and characterize the following items:

(a) hazardous substances and/or hazardous wastes present in all relevant environmental media (e.g., air, water, soil, sediment, and biota);

(b) environmental fate and transport mechanisms within specified environmental media;

(c) intrinsic toxicological properties of human health standards and criteria of specified hazardous substances or hazardous wastes;

(d) exposure pathways and extent of expected or potential exposure;

(e) population at risk; and

(f) extent of expected harm and the likelihood of such harm occurring.

5.3.3.8. Feasibility Study Plan. A Feasibility Study Plan shall be prepared by the Respondents which describes how the Feasibility Study will be performed. The objective of the Feasibility Study is to identify a remedial action or set of remedial actions which will permanently prevent or minimize the release of hazardous substances or contaminants from the Site so that they do not migrate or cause substantial danger to present or future public health and welfare or the environment. This objective shall be accomplished through the identification, development, and evaluation of remedial action alternatives with respect to technical, public health, environmental, institutional, and cost considerations. The Feasibility Study Plan shall include, at a minimum, the following items:

(a) A summary of the existing and potential hazards for which corrective action may be required;

(b) A description of the alternative remedial actions which will be evaluated;

(c) A list of the technologies which will be screened for each alternative remedial action described in (b) above;

(d) A description of the public health, environmental, and cost factors and criteria which will be considered in screening and analyzing each alternative remedial action technology, including, but not limited to, effectiveness, reliability, timeliness of implementation, unit cost, availability, operation and maintenance costs and conformity with applicable laws and regulations.

5.3.3.9. Schedule. A schedule shall be prepared by the Respondents which provides the time frames and dates of completion for each activity conducted under the RI/FS Workplan. The schedule shall be updated on a quarterly basis and shall also contain milestones for site studies and construction activities associated with millitary construction projects.

5.3.4. RI/FS Workplan Implementation. The Respondents shall implement the RI/FS Workplan as approved by the Department in accordance with the approved schedule.

5.3.5. Community Relations Plan. A Community Relations Plan shall be prepared by the Respondents which describes how the public and the adjoining community will be kept informed of all

activities conducted at the Site under this Remedial Action Order. The Community Relations Plan shall be prepared in accordance with EPA's "Community Relations in Superfund: A Handbook", dated March 1986, and Department's "Community Relations Plan Outline for Responsible Parties and Zone Contractors" (see Exhibit F).

5.3.6. Remedial Investigation Report. A Remedial Investigation Report shall be submitted by the Respondents to the Department for review and approval in accordance with the approved RI/FS Workplan Schedule. The Remedial Investigation Report shall summarize the results of the Remedial Investigation including the presentation and interpretation of all data and information generated and/or compiled during the Remedial Investigation. The Remedial Investigation Report shall, address the following subjects relating to the Site:

(a) Introduction

(1) Overview of Report

(2) Site Background Information

(3) Nature and Extent of Problem(s)

(4) Remedial Investigation Summary

(b) Site Features Investigation

(1) Demography

(2) Land Use

(3) Natural Resources

(4) Climatology

(c) Hazardous Substance Investigation

(1) Waste Types

(2) Waste Component Characteristics and Behavior

(d) Hydrogeologic Investigation

(1) Soils

(2) Geology

(3) Ground Water

(e) Surface Water Investigation

(1) Surface Water

(2) Sediments

(3) Flood Potential

(4) Drainage

(f) Air Investigation

(g) Biota Investigation

(1) Flora

(2) Fauna

(h) Public Health and Environmental Evaluation

(1) Potential Receptors

(2) Public Health Impacts

(3) Environmental Impacts

5.3.7. Feasibility Study Report. The Feasibility Study Report shall be submitted by the Respondents to the Department for review and approval in accordance with the approved RI/FS Workplan Schedule. The Feasibility Study Report shall summarize the results of the Feasibility Study including presentation and interpretation of all data and information generated and/or compiled during the Feasibility Study. The Feasibility Study shall address the following subjects relating to the site.

(a) Introduction

(1) Site Background Information

(2) Nature and Extent of Problems

(3) Objectives of Remedial Action(s)

(b) Screening of Remedial Action Alternatives

(1) Technical Criteria

(2) Remedial Action Alternatives Developed

(3) Environmental and Public Health Criteria

(4) Other Screening Criteria

(5) Cost Criteria

(c) Description of Remedial Action Alternatives

(1) Pilot Studies

(2) Bench Tests

(d) Analysis of Remedial Action Alternatives

(1) Technical Feasibility

(2) Environmental Evaluation

(3) Institutional Requirements

(4) Public Health Evaluation

(5) Cost Analysis

(e) Summary of Alternatives

(f) Recommended Remedial Action

5.4. Draft Remedial Action Plan. Within 120 calendar days after the effective date of Department's approval of the Remedial Investigation Report and the Feasibility Study Report, the Respondents shall prepare and submit to the Department for review and approval a Draft Remedial Action Plan (RAP) which is based on

the RI/FS reports. The Draft RAP shall set forth in detail appropriate steps to remedy air, soil, surface water, and ground water contamination at the Site and adjacent areas. The RAP shall be prepared in accordance with the standards and requirements set forth in California Health and Safety Code Section 25356.1. In addition, the Draft RAP shall contain a schedule for implementation of all proposed removal and remedial actions. After the plan is reviewed and approved, the Plan shall be circulated for 30 days for public comment. A public meeting on the Plan shall be held during the 30-day public comment period.

5.5. Final Remedial Action Plan Within 60 days of the completion of the 30-day public comment period, the Respondents shall revise the Draft Remedial Action Plan as directed by the Department. The revised Plan shall be considered the Final Remedial Action Plan.

5.6. Remedial Design. Within 240 days after the effective date of the Department approval of the Final RAP in accordance with California Health and Safety Code Section 25356.1, the Respondents shall submit to the Department for review and approval a detailed Remedial Design (RD) containing technical and operational plans and engineering designs for implementation of the approved remedial or removal action alternative(s), and a schedule for implementing the construction phase. The Remedial Design shall also describe post remedial sampling and monitoring procedures for air, soil, surface water, and ground water, operation and maintenance procedures, and shall cover all of the

subjects described in paragraphs 5.3.3.2, 5.3.3.4, 5.3.3.6, and 5.3.3.9 as they relate to the removal and remedial activities.

5.7. Implementation of Final Remedial Action Plan. Upon Department approval of the Remedial Design and schedule, the Respondents shall implement the Final RAP as approved in accordance with the approved Remedial Design and schedule. Prior to beginning any implementation work, the Respondents shall provide the Department with a description of the nature and design of the construction or equipment to be employed, a site specific hazardous waste transportation plan, the identity of any contractors, transporters and other persons conducting the removal and remedial activities for the Respondents.

5.7.1. Operation and Maintenance. The Respondents shall be responsible for all operation and maintenance requirements in accordance with the Final RAP and approved RD.

5.7.2. Changes to Final RAP. During the implementation of the Final RAP, the Department may specify additions, modifications, and revisions to the Final RAP as it deems necessary to protect public health and safety or the environment.

5.7.3. Discontinuation of Remedial Technology. Any remedial technology employed in implementation of the final RAP shall be left in place and operated by the Respondents until written authorization to discontinue, move or modify has been received from the Department.

5.8. Removal and Expedited Response Actions Prior to the development and implementation of the Final Remedial Action Plan (RAP), the Respondents may propose to the Department removal or

expedited response actions at contaminated locations that will reduce the overall public health and environmental threat on the Site. Such actions shall be consistent with CERCLA, the NCP, and the California Health and Safety Code. The Respondents shall notify the Department in writing of any proposed removal or expedited response removal action at least 10 days prior to its planned implementation. The written notification shall, at a minimum, present justification for the need for such an action.

5.9. The Department withdraws the Remedial Action Order Docket No. HSA87/88-031RA, issued on December 10, 1987, and issues this Order in its place.

VI

OTHER PROVISIONS

6.1. Quality Assurance/Quality Control. All sample collection and analysis activities conducted by the Respondents under this Order shall be performed in accordance with quality assurance/quality control (QA/AC) procedures submitted by the Respondents and approved by the Department pursuant to this Order. In addition, Respondents shall:

(a) Follow the QA/QC guidelines for sampling and analysis as approved by the Department.

(b) Consult with the Department in planning for, and prior to, field sampling and laboratory analysis.

(c) Inform the Department Project Officer in advance which laboratories will be used by Respondents and ensure

that Department personnel and Department authorized representatives have reasonable access to the laboratories and personnel used for analyses.

(d) Ensure that laboratories used by Respondents for analyses perform such analyses according to approved methods or other methods deemed satisfactory to the Department. If methods other that approved methods are to be used, Respondent shall submit all protocols to be used for analyses to the Department for approval within fourteen (14) calendar days prior to the commencement of analyses.

(e) Ensure that laboratories used by Respondents for analyses participate in a quality assurance/quality control program equivalent to that which is followed by the Department. As part of such program, and upon request by the Department, such laboratories shall perform analysis of a reasonable number of known samples provided by the Department to demonstrate the quality of the analytical data.

6.2. Project Coordinator. Within 15 calendar days of the effective date of this Remedial Action Order, the Respondents shall submit to the Department in writing the name and address of a Project Coordinator whose responsibilities will be to receive all notices, comments, approvals and other communications from the Department to the Respondents. The Respondents may, in its discretion, change the Project Coordinator, in which case the Respondents shall submit to the Department the name and address

of the new Project Coordinator within five calendar days of the change.

6.3. Project Engineer/Geologist. The work performed pursuant to this Remedial Action Order shall be under the direction and supervision of a qualified Professional Engineer, a Certified Engineering Geologist, or a Registered Geologist with expertise in hazardous waste site cleanup. The name and address of the project engineer, engineering geologist or geologist chosen by the Respondents shall be submitted to the Department within 15 calendar days of the effective date of this Remedial Action Order.

6.4. Monthly Progress Reports. Beginning with the month following this Remedial Action order and monthly thereafter, the Respondents shall submit monthly progress reports on activities conducted pursuant to this Order. The reports shall describe: 1) specific actions which have been taken by or on behalf of the Respondents during the previous calendar month; 2) actions expected to be undertaken during the current calendar month; 3) any requirements under this Order that were not completed and any problems or anticipated problems in complying with this Order.

6.5. Incorporation of Documents. All plans, schedules, reports, specifications, and other documents required or submitted by the Respondents pursuant to this Remedial Action Order are, upon written approval by the Department, incorporated in this Remedial Action Order and shall be implemented by the Respondents as approved.

6.6. Exhibits. All Exhibits attached hereto are incorporated herein by this reference.

6.7. Submittals and Approvals. All submittals and notifications from the Respondents required by this Remedial Action Order shall be sent simultaneously to:

Mr. Dwight Hoenig, Chief
Northern California Coast Section
Toxic Substances Control Division
2151 Berkeley Way, Annex 7
Berkeley, CA 94704

Mr. Roger James
Executive Officer
California Regional Water Quality
Control Board
San Francisco Bay Region
1111 Jackson Street, Room 6040
Oakland, CA 94607

Mr. Keith Takata, Chief
Superfund Program Branch, Region IX
U.S. Environmental Protection Agency
215 Fremont Street
San Francisco, CA 94105

All approvals, decisions, notices, and requests made under the Remedial Action Order shall be communicated to the Respondents in writing by Mr. Dwight Hoenig, Chief or his designee. No informal advice, guidance, suggestions or comments by the Department regarding reports, plans, specification, schedules or any other writing prepared or submitted by or for the Respondents shall be construed to relieve the Respondents of their obligation to obtain such formal approvals as may be required herein.

6.8. Flow of Information. Respondents shall provide the Department with copies of all analytical reports and results of air, soil, water, and waste sampling conducted for the purpose of

identifying the presence of hazardous substances or wastes. The analytical reports and results shall be submitted to the Department within 30 days of receipt from the analytical laboratories by the Respondents.

6.9. Department Review and Approval. If the Department determines that any report, plan, schedule or other document submitted for approval pursuant to this Order fails to comply with this Order or fails to protect public health or safety or the environment, the Department may:

a. modify the document as deemed necessary and approve the document as modified or;

b. notify the Respondents in writing and, if requested within 15 days of such notification, provide the Respondents with an opportunity to meet and confer with the Department. Within a time period specified by the Department, the respondents shall modify and resubmit the document or;

c. in cases where the document fails to comply with this order, make a determination of noncompliance pursuant to Section 25355.5 (a) (2) of California Health and Safety Code.

6.10. Modifications. The Respondents may, by written request, seek modification, termination or revision of this Remedial Action Order or any portion of this Remedial Action Order or any program or plan submitted pursuant to this Remedial Action Order at any time. This Remedial Action Order and any applicable program, plan, or schedule may be modified, terminated or revised by written notice of the Department at any time. In

addition, the Department reserves the right to take additional enforcement action including issuing new or additional Orders as provided by law. Any modification to this Remedial Action Order pursuant to this paragraph shall be effective upon issuance and deemed incorporated in this Remedial Action Order.

6.11. Time Periods. Unless otherwise specified, time periods begin from the effective date of this Remedial Action Order and "days" means calendar days.

6.12. Extension Requests. If, for any reason, the Respondents are unable to perform any activity or submit any document within the time required under this Remedial Action Order, the Respondents may request, in writing an extension of the time specified. The extension request shall include a justification for the delay. All such requests shall be in advance of the date on which the activity or document is due.

6.13. Extension Approvals. The Department shall grant the request and specify a new schedule in writing upon showing that good cause exists for an extension. The new schedule shall be deemed incorporated into the Remedial Action Order.

6.14. Endangerment During Implementation. In the event that the Chief of the North Coast California Section of the Toxic Substances Control Division of the Department (or his equivalent in any successor agency) determines that any activities or circumstances are creating or may create an imminent or substantial endangerment to the health and safety of people on the site or in the surrounding area or to the environment, the Section Chief (or equivalent) may order the Respondents to stop

further implementation of this Remedial Action Order for such period of time as needed to abate the endangerment. Any deadline contained in this Remedial Action Order which is directly affected by a Stop Work Order under this section shall be extended for the term of such Stop Work Order.

6.15. Site Access. The Respondents shall assist and cooperate with the Department and/or its authorized representatives in obtaining the authority to enter and move freely about all property at the Site, consistent with security regulations at the Site, at all reasonable times for the purposes of, inter alia: inspection records, operations logs, sampling and analytic data, and contracts related to this Remedial Action Order; reviewing the progress of the Respondents in carrying out the terms of this Remedial Action Order; conducting such tests as the Department may deem necessary; and verifying the data submitted to the Department by the Respondents. Nothing in this paragraph is intended or shall be construed to limit in any way the right of entry or inspection that the Department or any other agency may otherwise have under law.

6.16. Sampling Data and Document Availability. The Respondents shall permit the Department and/or its authorized representatives to inspect and copy all sampling, testing, monitoring or other data generated by or on the Respondents' behalf in any way pertaining to work undertaken pursuant to this Remedial Action Order. The Respondents shall maintain a central depository of the data, reports, and other documents prepared pursuant to this Remedial Action Order. All data, reports and

other documents shall be preserved by the Respondents for a minimum of six years or three years after completion of the RAP, which ever is later. If the Department requests that some or all of these documents be preserved for a longer period of time, the Respondents shall either comply with that request or deliver the documents to the Department or permit the Department to copy the documents prior to destruction. The Respondents shall notify the Department in writing at least six months prior to destroying any documents prepared pursuant to this Remedial Action Order.

6.17. Notification. Respondents shall notify the Department at least 5 days before conducting any well drilling, installation of equipment, or sampling. At the request of the Department, Respondents shall provide or allow the Department or its authorized representative to take split samples of all samples collected by Respondents pursuant to this Order.

6.18. Cost Recovery. The Respondents shall be liable for the following costs: (1) all direct costs, including staff time, for oversight and review of activities by the Respondents under this Order; (2) any direct costs incurred by the Department prior to entering into this Order and as a result of the release or threatened release of hazardous substances or hazardous wastes at the Site; (3) all of the Department's cost for contractor oversight and review of activities by the Respondents under this Order; and (4) an amount, equal to ten percent (10%) of all direct costs as reimbursement for the Department's general administrative costs. Failure or refusal of the Respondents to comply with this Remedial Action Order may make the Respondents

liable for any government cost incurred, including those payable from the Hazardous Substance Account or the Hazardous Substances Cleanup Fund for any remedial action at the site, as provided in Section 25360 of the Health and Safety Code and other applicable provisions of law.

6.19. Additional Enforcement Actions. The Respondents shall carry out this Remedial Action Order in compliance with all applicable State and Federal requirements.

6.20. Government Liabilities. The State of California shall not be liable for any injuries or damages to persons or property resulting from acts or omissions by the Respondents, its officers, directors, employees, agents, receiver, trustees, successors, or of any persons, including but not limited to, firms, corporations, subsidiaries, contractors, or consultants in carrying out activities pursuant to this Remedial Action order, nor shall the State of California be held as party to any contract entered into by the Respondents or their agents in carrying out activities pursuant to this Remedial Action Order.

6.21. Liability. Nothing in this Order shall constitute or be construed as a satisfaction or release from liability for any conditions or claims arising as a result of past, current or future operations of the Respondents. Nothing in this Remedial Action Order is intended or shall be construed to limit the rights of any of the parties hereto with respect to claims arising out of or relating to the deposit or disposal at any other location of substances removed from the site. Nothing in this Remedial Action Order is intended or shall be construed to

limit or preclude the Department from taking any other enforcement actions and recovering cost thereof.

6.22. Severability. The requirements of this Remedial Action Order are severable, and the Respondents shall comply with each and every provision hereof notwithstanding the effectiveness of any other provision.

6.23. Parties Bound. This Remedial Action Order applies to and is binding upon the Respondents, their directors, officers, agents, employees, contractors, and their successors, and assigns the Department and any successor agency with responsibility for administering the provisions of Chapter 6.8 of Division 20 of the Health and Safety Code.

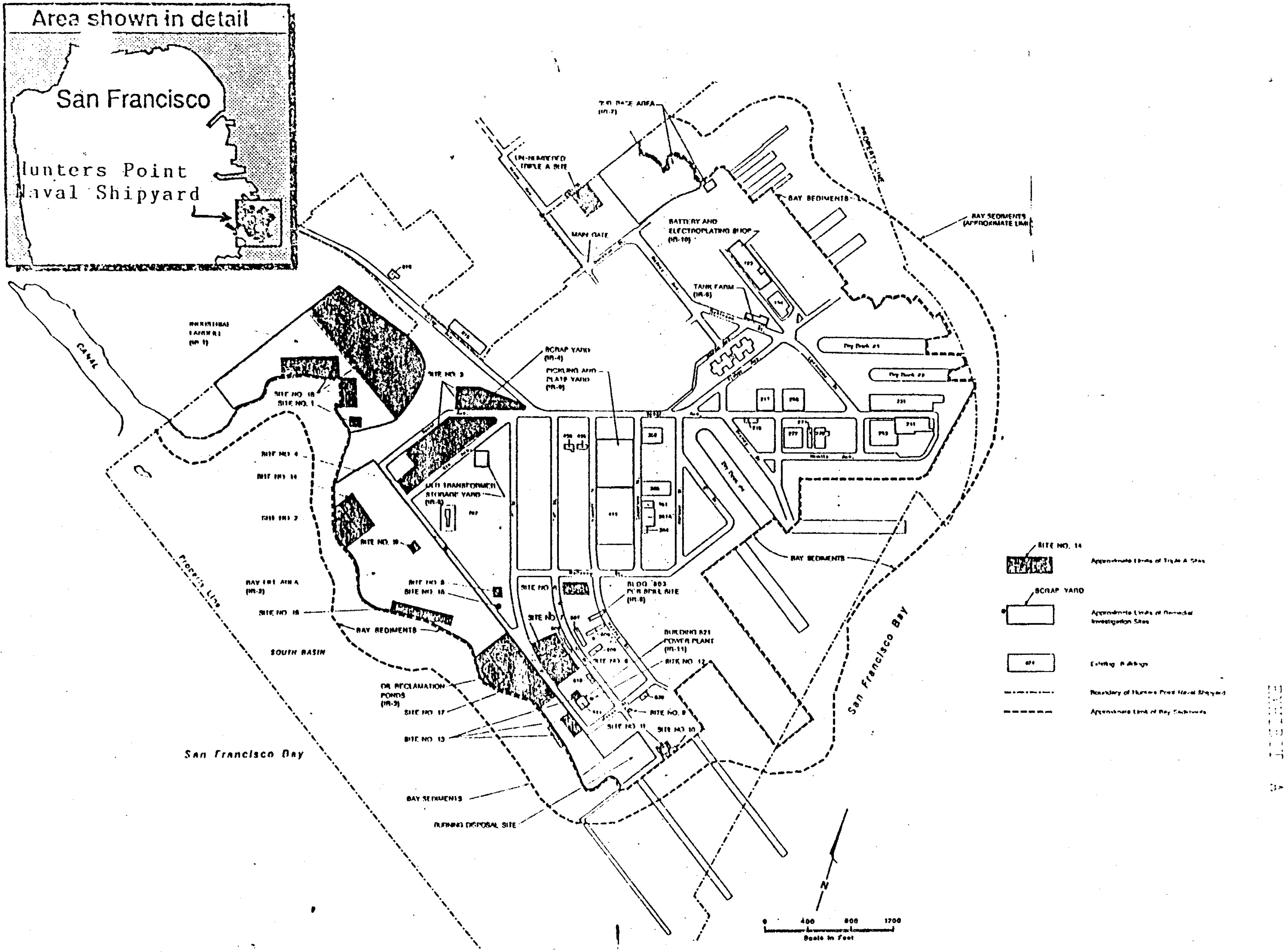
VII

EFFECTIVE DATE

This Order is issued and is effective on January 8, 1988. All times for performance or response activities shall be calculated from the effective date.

It is so ordered this 7th day of January, 1987.

Dwight Egenig, Chief
North Coast California Section
Toxic Substances Control Division



Area shown in detail
San Francisco
lunters Point
Naval Shipyard
CANAL
SCRAP YARD
PICKLING AND PLATE YARD
MAIN GATE
BATTERY AND ELECTROPLATING SHOP (IR-10)
TANK FARM (IR-6)
BAY SEDIMENTS
BAY SEDIMENTS (APPROXIMATE LIMIT)
PROPERTY LINE
Property Line
Dry Dock #4
OLD TRANSFORMER STORAGE YARD
BLDG. 503 PCB SPILL SITE
BUILDING 521 POWER PLANT (IR-11)
OIL RECLAMATION PONDS (IR-3)
SOUTH BASIN
BURNING DISPOSAL SITE
San Francisco Bay
SITE NO. 14
Approximate Limits of Triple A Sites
Approximate Limits of Remedial Investigation Sites
Existing Buildings
Boundary of Hunters Point Naval Shipyard
Approximate Limit of Bay Sediments
Scale in Feet
N

Table 5-1

Industrial Sources and Quantities

Building No.	Description of Originating Process	Waste Quantities: Continuous Average Flow	Waste Quantities: Periodic Discharge	Waste Chemicals and Materials	Method of Disposal
258	Pipe Cleaning Shop -- draining of chemical tanks and rinse	2 gpm	6,000 gal. per week	Chemical Solution Tanks (1) Muriatic acid (2) Sodium hydroxide (3) Sulfuric acid (4) Chromic acid (5) Sodium hydroxide and Penesolve 814 (6) Penestrip CR	Combined sewer
				Other Chemicals Used Naconal powder, degreasing compound, Diesel oil	Landfill
411	Shipfitting Shop -- pickling of structural steel, draining of rinse water tanks and chemical tanks	----	15,000 gal. water rinse tank once per month. Each 15,000 gal. chemical tank 4 times per year.	Chemical Solution Tanks (1) sulfuric acid, sodium chloride, and inhibitor (2) Sodium dichromate and phosphoric acid	Combined sewer
411	Shipfitting Shop -- pickling of structural aluminum, draining of rinse water tanks and chemical tanks	3 gpm	7,500 gal. once per month	Chemical Solution Tanks (1) Wyandotte M.F. acid and Altrex cleaner (2) Wyandotte 2487 acid	Combined sewer
411	Shipfitting Shop -- sand blasting abrasive	1 gpm	190 tons/week	Spent blasting grit and sand containing paint, scrappings, rust (metal)	Bayfill Landfill
134	Inside Machining Shop -- cleaning of engine parts, draining of chemical tanks and rinse tank	1 gpm	----	Chemical Solution Tanks (1) Penesolve 814 (2) Penestrip CR	Combined sewer
123	Battery Overhaul -- discharge of electrolyte from batteries to be reconditioned, and washdown water	100 gpm during periods when electrolyte being discharged	----	"Used" electrolyte (sulfuric acid and distilled water), soda ash (for partial neutralization)	Storm sewer

Table 5-1

Industrial Sources and Quantities (Continued)

Building No.	Description of Originating Process	Waste Quantities: Continuous Average Flow	Waste Quantities: Periodic Discharge	Waste Chemicals and Materials	Method of Disposal
124	Acid Mixing Plant -- washdown of spilled acid, draining of acid tanks	----	1,000 gal. per month washdown water.	Sulfuric acid and distilled water (combined to form electrolyte for storage batteries)	Storm sewer
123	Plating Shop -- electroplating, paint stripping, irriditing, and parkerizing	20 gpm	----	Cyanide Plating Solutions Copper, cadmium and silver Acidic Plating Solutions Nickel, chrome, tin, lead, gold, and brass Other Chemical Solutions Penetol X, irridite, and Parko-composition Acid Solutions Chromic, nitric, sulfuric, phosphoric, fluoboric, and Muriatic Used containers and buckets	Storm sewer
111 and 112	Diesel Oil Pumping Plant -- draw-off from oil separator units, washdown of spillage	----	2,000 gal. per month	Emulsifying agent during washdown Waste oil	Oil reclamation plant, Storm sewer
270	Paint Shop -- cleaning paint buckets	100 gal. per day	1,000 gal. chemical solution tank 4 times per year	Sodium hydroxide Used paint buckets	Combined sewer
253 (1st floor)	Ordnance Shop -- cleaning, paint stripping, and painting of steel	2 gpm	3,000 gal. chemical solution tank 4 time per year	Sodium hydroxide, Stoddard solvent, Steam-Kleen, and various paints	Combined sewer
253 (2nd, 4th & 5th floors)	Electronic and Optical Shop -- cleaning, paint stripping and painting of aluminum and steel	2 gpm (total)	300 gal. chemical soultion tank once per month	Sodium hdyroxide, Oakite aluminum cleaner 164, and various paints	Combined sewer
211	Machine and Electronic Test and Repair Shop -- paint stripping and painting	1/2 gpm	----	Sodium hdyroxide, D-Floate, Steam-Kleen compound, and various paints	Combined sewer

Table 5-1

Industrial Sources and Quantities (Continued)

Building No.	Description of Originating Process	Waste Quantities: Continuous Average Flow	Waste Quantities: Periodic Discharge	Waste Chemicals and Materials	Method of Disposal
271	Paint Shop -- spray painting	----	300 gal. once per week	D-Kleen, various paints	Landfill
217	Sheet Metal Shop -- spray painting	1 gpm	300 gal. twice per month	D-Floate, various paints	Landfill Combined sewer
280	Aluminum Cleaning Facility	1/2 gpm	5,000 gal. rinse tank once per month. Trisodium tank once per week. Wyandotte tank once every 6 mo.	Chemical Solution Tanks (1) Sodium phosphate tribasic (2) Wyandotte 2787 deoxidizer (No neutralization)	Combined sewer
---	Oil Reclamation Plant -- gravity separation in open ponds	14,000 gal. per day	1,000,000 gal/year	Fuels Reclaimed Bunker Oil, Lube Oil, and Diesel Oil Chemical Used Dunkit (degreaser) Slix (oil emulsifier) Gamlea (oil emulsifier) Clock 06:39 (oil emulsifier)	Reclaimed oily wastewater to Bay
272	Riggers Shop -- cleaning of chain hoists	100 gal. per day	----	Steam-Kleen	Combined sewer
351	Electronics Shop -- cleaning and painting electronic equipment	1 gpm	----	Chem-mist detergent, very small quantities of alcohol and trichloroethylene	Combined sewer
351	Electronics Shop -- photographic reproduction and photo developing	30 gpm	200 gal. per week from chemical solution trays	Ammonium thiosulfate, silver, salts, acetic acid, sodium sulfite, sodium carbonate, and minute quantities of cyanides. Also various chemicals washed off print paper	Combined sewer

Table 5-1

Industrial Sources and Quantities (Continued)

Building No.	Description of Originating Process	Waste Quantities: Continuous Average Flow	Waste Quantities: Periodic Discharge	Waste Chemicals and Materials	Method of Disposal
351A	Electronics Shop -- cleaning of electronic equipment	100 gal. per day	----	Chem-mist detergent small amounts of thinner and solvent	Combined sewer
232	Electronics Repair Shop -- no cleaning facilities	----	100 lbs. used parts/day	Electronic parts, wiring, radium dials	Landfill
366	Boat Shop -- painting and washing	100 gal.	300 gal. once per	Epoxides, polyester resin, methyle-thylketones	Combined sewer
215	Fire House -- washing of apparatus	300 gal. per day	----	Detergent	Combined sewer
530	Hobby Shop -- car washing	300 gal. per day	----	Detergent	Combined sewer
113	Salvage Divers Shop -- no cleaning facilities	----	1,000 lbs/week	Waste metal equipments	Scrap yard, Landfill
435	Equipment Storage Bldg. -- spray painting	200 gal. per day	300 gal. once per per week	Various paints, paint thinner	Combined sewer
436	Material Storage Bldg. -- washing garbage cans	2 gpm	500 gal. twice per year	Sodium hydroxide, detergent	Combined sewer
302	Transportation Shop -- cleaning transportation equipment	1 gpm	----	Decarbonizer, degreaser, and detergent	Combined sewer
101	Reproduction Department -- blue-print, ozalid, and photo developing (small amount)	25 gpm	500 gal. per week from solution trays, etc.	Hydrogen peroxide, ammonia, photo-developer solutions and various chemicals washed off print paper	Combined sewer
231	Machine Shop -- cleaning facility	2 gpm	5,000 gal. rinse water once per week. 3,000 gal. chemical solution once per month	Chemical Solution Tanks (1) sulfuric Acid - 1 (2) Phosphoric Acid - 1 (3) Sodium Hydroxide - 3 (4) Dichord Benzene - 2	Combined sewer
203	Power Plant -- boiler blowdown and backwash from zeolite water softeners	5,000 gal. per month	1,500 gal. 10 times per month backwash	Softeners -- dilute sulfuric acid, salt solution	Combined sewer

Table 5-1

Industrial Sources and Quantities (Continued)

Building No.	Description of Originating Process	Waste Quantities: Continuous Average Flow	Waste Quantities: Periodic Discharge	Waste Chemicals and Materials	Method of Disposal
231	Machine Shop -- backwash from water demineralization plant, and boiler blowdown	2,000 gal. per month	3,000 gal. 4 times per month (anion softeners). 1,500 gal. 7 times per month (cation softeners).	Anion softeners -- caustic solution Cation softeners -- sulfuric acid solution	Combined sewer
			1,000 lbs solid, metal waste per month	Metal, scrap equipment	Landfill

EXHIBIT C - SITES IDENTIFIED BY THE U.S . NAVY ALLEGED TO HAVE BEEN USED BY TRIPLE A TO STORE AND/OR DISPOSE OF HAZARDOUS WASTE AND OTHER WASTES

Site 1: South End Gate of old "Pick Your Parts," cow pasture: barrels and drums, no labels - contents unknown.

Site 2: South-Southwest shoreline of ex-Hunters Point Naval Shipyard (HPNSY), adjacent to cow pasture; industrial debris, paint cans, wire insulation, possible asbestos.

Site 3: Area enclosed by fencing, Bldg. 702 and salvage yard, Bldg. 807 and scrapyard, Bldg. 810 and lay down area: Barrels, batteries, wire insulation, possible asbestos lagging, oil and chemical drainings into storm drain.

Site 4: South fenced area outside ex-HPNSY Bldg. 702; 55 gal. barrels crushed on concrete slab and surrounding dirt area, contents run out onto dirt. Barrels and paint cans burried and sticking out of dirt.

Site 5: Old commissary area: drums with liquid contents and oily dirt pile which has been removed.

Site 6: J Street South of Bldg. 505: barrels which have been removed.

Site 7: Open area between Bldg. 505 and Bldg. 521, East: oily waste, salvage waste drained/dumped into gully area and covered by sand, sludge is about 1 inch thick.

Site 8: Open area between Manseau Street and Mahan Street, North of Bldg. 505: oily sawdust, rust, industrial sand piles.

Site 9: Old transformer lot at the corner of 11th Street and Mahan Street: barrel containing old rags which was subsequently labeled PCB's after Turnbull was questioned about it - has been removed. Other old barrels and cans.

Site 10: Outside SOAP team lot at J Street, West of Bldg. 526: a line of barrels, the last one marked PCB. Have a picture of Tripe A pumping liquid out of the barrels. Barrels have been removed.

Site 11: Next to site 10: additional barrels.

Site 12: Open area, North directly behind Bldg. 521: dumpster containing circuit boards, acid boards, copper etching plates, x-ray plates, and a tank being utilized as an incinerator.

Site 13: Tank S-505, tank berm and area South of Bldg. 521 and open area West of Bldg. 521: April 1986 discovered Triple A marked hoses connected to pump running across the road pumping oily waste into ponds.

Site 14: West beach and open area between the ends of Spear Ave. and 6th Avenue: materials from the disposal of a building and merchant boat materials, similar to Site 2, and acid tank roofs.

Site 15: Old commissary store pad (next to Site 5): sandblasting grit. Triple A called IT to clean it up.

Site 16: Open area South of Bldg. 809 and Bldg. 830: land-fill of industrial debris now under about 12 ft. of top soil, slimy and wet, asphalt and cement.

Site 17: Open beach area South, Southwest (SSW) of K Street and East, Southeast (ESE) of Bldg. 600: industrial sand and asphalt, some liquids (Leroy experienced red skin reaction).

Site 18: Shoreline directly South and adjacent to Bldg. 600: buried furniture and fireboard, paint cans and asphalt.

Site 19: Baseball diamond behind Bldg. 600: oily waste in the center of the baseball field.

EXHIBIT D

Health Risk Associated with Hazardous Substances Found at the Site

1. 1,1-Dichloroethane (1,1-DCA). 1,1-Dichloroethane (1,1-DCA) is a central nervous system depressant in humans when inhaled at high concentrations. It may also be hepatotoxic (toxic to the liver) in humans. Human health effects associated with chronic inhalation of this compound include potential kidney and liver injury and lung irritation. 1,1-DCA is also a skin irritant and eye irritant upon dermal contact. 1,1-DCA is a hazardous waste listed in 40 CFR 302.4.

2. 1,1,1-Trichloroethane (TCA). Long-term exposure to TCA produces a narcotic effect and depresses the central nervous system. Acute exposure symptoms include dizziness, uncoordination, drowsiness, increased reaction time, unconsciousness, and death. TCA is a listed hazardous substance in 40 CFR 302.4.

3. Tetrachloroethylene (PCE, Perchloroethylene). Short-term exposure to PCE through ingestion and inhalation may cause nausea, vomiting, headache, dizziness, drowsiness, and tremors. Skin contact with PCE in the liquid state causes irritation and blistering. Both the liquid and vapor state are irritating to the eyes. Long term exposure may cause

liver and kidney damage. PCE has been classified by the IARC in Category 3 (possible human carcinogen). PCE is is a listed hazardous substance in 40 CFR 302.4 and a listed hazardous material (No. 576) in Section 66680, Title 22, California Administrative Code.

4. Trichloroethylene (TCE). Acute exposure to TCE depresses the central nervous system, causing such symptoms as headache, dizziness, vertigo, tremors, irregular heartbeat, fatigue, nausea, vomiting and blurred vision. TCE in a gaseous state may cause irritation of the eyes, nose, and throat. TCE in a liquid state may cause burning irritation and damage to the eyes. Repeated or prolonged skin contact with the liquid may cause dermatitis Long-term effects may include liver and kidney injury. TCE is included in IARC Category 3 (possible human carcinogen). TCE is is a listed hazardous substance in 40 CFR 302.4 and a listed hazardous material (No. 744) in Section 66680, Title 22, California Administrative Code.

5. Benzene. The primary toxicological effects of short-term exposure to benzene through inhalation and ingestion are on the central nervous system. Symptoms include headache, dizziness, drowsiness and nausea which may progress to convulsions, respiratory paralysis and death with high vapor concentrations.

The International Agency for Research on Carcinogens ("IARC") lists benzene in Category 1 (sufficient evidence of human carcinogenicity) in its weight-of-evidence ranking for potential carcinogens. Benzene is is a listed hazardous substance in 40 CFR 302.4 and a listed hazardous material (No. 101) in Section 66680, Title 22, California Administrative Code.

6. Xylene. Inhalation of xylene vapors by humans produces central nervous system depression with symptoms such as dizziness, nausea, vomiting, drowsiness, abdominal pain, and loss of appetite. Liquid xylene and high concentration xylene vapors are eye irritants, with possible reversible damage to the cornea. Liquid aspiration of the compound may cause chemical pneuomonitis, pulmonary edema, and hemorrhage in the lungs. Chronic effects are similar to acute effects but are potentially irreversible. Xylene is a listed hazardous substance in 40 CFR 302.4 and is a listed hazardous material(No. 776) in Section 66680, Title 22, California Administrative Code.

7. Toluene. Inhalation of toluene vapors may produce irritation of the upper respiratory tract, disturbance of vision, dizziness, nausea, collapse, and coma. Direct contact with skin and eyes causes burning. Exposure may cause headache, nausea, loss of appetite,

lassitude, and impairment of coordination and reaction time. Higher concentrations may cause anemia, leucopenia and enlargement of the liver. Toluene is a listed hazardous substance in 40 CFR 302.4.

8. Ethylbenzene. Ethylbenzene vapors induce irritation of the eyes and skin in humans at high concentrations. Inhalation of vapors irritates the nose and throat. At extremely high concentrations, narcosis can occur. Animal data indicate liver and kidney damage upon ingestion of concentrations averaging 500 mg/kg/day over a short-term exposure period. Ethylbenzene is a listed hazardous substance in 40 CFR 302.4 and is a listed hazardous material (No. 320) in Section 66680, Title 22, California Administrative Code.

9. 1,2; 1,3; 1,4; Dichlorobenzene (ortho, meta, para) A helogenated hydrocarbon and all three isomers are toxic. The ortho-isomer is probably more toxic than the meta and para forms. They are all irrtants to skin and mucous menbrane with highest irritation via oral route. Experiments have produced liver and kidney injury in laboratory animals. Para-isomer has been reported to cause liver injury in humans. All three isomers are listed hazardous substance in 40 CFR 302.4 and are listed hazardous material (No.257) in Section 66680, Title 22, California Administrative Code.

10. Chlorobenzene. Acute exposure to chlorobenzen causes sedation, anesthesia and death due to respiratory failure. Chronic exposure to chlorobenzene may result blood poisoning, and lung, liver and kidney damage. Chlorobenzene may be a human carcinogen. Chlorobenzene is a listed hazardous substance in 40 CFR 302.4 and is a hazardous substance (Health and Safety Code, Section 25316, Title 22, California Administrative Code, Section 66680(d) (No.191) and 66696).

11. Vinyl Chloride. Inhalation of vinyl chloride causes headache, dizziness, abdominal pain, numbness, and tingling of the extremities. The vapors cause eye irritation. Skin contact with the liquid causes irritation and frostbite due to evaporation; skin contact with the vapor may also cause irritation. The long term effects due to exposure to vinyl chloride include liver damage an# liver cancer. There is evidence of mutagenicity. The IARC has classified vinyl chloride in Category 1 for carcinogens (known human carcinogen). Vinyl chloride is a listed hazardous substance in 40 CFR 302.4 and is a listed hazardous material (No. 769) in Section 66680, Title 22, California Administrative Code; and is also a listed "Extremely Hazardous Waste" as defined in Section 66720, Title 22, California Administrative Code.

12. Polychlorinated Biphenyls. Reported adverse effects from humans exposed to PCBs include chloracne, impairment of liver function, a variety of neurobehavioral and affective symptoms, minor birth abnormalities, and probably increased incidence of cancer. PCBs are carcinogenic in rats and mice and, in appropriate circumstances, enhance the effects of other carcinogens (U.S. EPA, 1985b). The EPA CAG has classified PCBs as B2 carcinogens (probable human carcinogen) (U.S. EPA, 1985a). PCB is a listed hazardous substance in 40 CFR 302.4 and is a listed hazardous material (No. 606) in Section 66680, Title 22, California Administrative Code.

13. Naphthalene. Naphthalene causes hemolysis with subsequent blocking of renal tubules by precipitated hemoglobin. The systemic reaction of exposure to naphthalene are nausea, headache, diaphoresis, hematuria, fever, anemia, liver damage, vomiting, convulsion, and coma. The fatal dose of ingested naphthalene is approximately 2 gram. This chemical is most dangerous in children up to age six, in whom absorption occurs rapidly. Naphthalene is a listed hazardous substance in 40 CFR 302.4 and is also a listed hazardous material (No. 524) in Section 66680, Title 22, California Administrative Code.

14. Chromium (Total). Chromium has been classified by the U.S. Environmental Protection Agency's Carcinogen Assessment Group as a human carcinogen when exposure occurs through inhalation. Chromium compounds are listed hazardous substances in 40 CFR 302.4 and are listed hazardous materials (No. 204) in Section 66680, Title 22, California Administrative Code.

15. Lead. Short-term exposure to lead can cause reversible kidney damage, but prolonged exposure at high concentrations may result in progressive kidney damage and possibly kidney failure. Anemia, due to the inhibition of hemoglobin synthesis and a reduction in the lifespan of circulating red blood cells, is an early manifestation of lead poisoning. The most serious effects associated with markedly elevated blood levels are severe neurotoxic effects that include irreversible brain damage, as indexed by the occurrence of acute or chronic encephalophatic symptoms. Lead compounds are listed hazardous substance in 40 CFR 302.4 and are listed as hazardous materials (No. 406) in Section 66680, Title 22, California Administrative Code.

16. Mercury. Acute poisoning of animals and humans by mercury is marked by stomatitus, tremors, psychic disturbances, excessive salivation, and in some cases gingivitis with loosening of the teeth and a dark line

on the gum margins. Mercury and mercury compounds are listed hazardous substance in 40 CFR 302.4 and are listed hazardous materials (No. 472 and No. 473) in Section 66680, Title 22, California Administrative Code. Mercury and/or mercury compounds are a listed "persistent and bioaccumulative toxic substance" in Section 66699, Title 22, California Administrative Co#e. Mercury and its compounds are also an "Extremely Hazardous Waste" as defined in Section 66720, Title 22, California Administrative Code.

17. Cadmium. Acute and chronic exposure to cadmium in animals and humans results in renal dysfunction, hypertension, anemia, and altered liver microsomal activity. The kidney is considered to be the critical target organ in humans chronically exposed to cadmium by ingestion. Cadmium has been classified by EPA as a probable human carcinogen according to EPA's Proposed Guidelines for Carcinogen Risk Assessment, based upon evidence of carcinogenicity in humans through inhalation exposure. Cadmium compounds are listed hazardous substance in 40 CFR 302.4 and are listed hazardous materials (No. 152) in Section 66680, Title 22, California Administrative Code.

18. Nickel. The absorption of dietary nickel from the gastrointestinal tract appears to be quite low with the majority of nickel excreted in the feces. Laboratory

studies have demonstrated depressed body weight gain, alterations in hematology parameters, cytochrome oxidase activity, and iron contents of organs following high-dose oral exposure. The chemical form and route of exposure are important factors in determining the carcinogenic potential of nickel. Metallic nickel, nickel subsulfide, and nickel carbonyl, which are insoluble nickel compounds, have been shown to produce tumors through inhalation exposure in animals. The EPA CAG has classified nickel as a human carcinogen through the inhalation route. Nickel is a listed hazardous substance in 40 CFR 302.4 and is a listed hazardous material (No. 528) in Section 66680, Title 22, California Administrative Code.

19 Copper Copper saultsa are skin irritants, causing itching, erythema, and dermatitis. Copper salts may cause conjunctivitis in the eyes and ulceration and turbility of the cornea. Fumes and dust of copper may cause upper respiratory tract irritation, nausea, and gastrointestinal tract irritation. In man the ingestion of a large quantity of copper sulfate has caused vomiting, gastric pain, dizziness, exhaustion, anemia, cramps, convulsions, shock, coma and death. Symptoms attributed to demage to the nervous system and kidney have been recorded. Jaundice has been observed and, in some cases, the liver has been enlarged. Copper

compounds are listed hazardous substance in 40 CFR 302.4 and are listed hazardous material (No. 221) in Section 66680, Title22, California Administrative Code.

20. Asbestos Prolonged inhalation of asbestos dust can cause cancer of the lung, pleura and peritoneum, and has experimentally produced cancers of the peritoneum, intestine, bronchus and oropharynx. Clinically, the most striking sign is shortness of breath of gradually increasing intensity, often associated with a dry cough. In the early stages physical signs are absent or slight. In the later stages rales may be heard, and sometimes there is frequently clubbing of the fingers. Asbestos is a listed hazardous material (No. 75) in Section 66680, Title 22, California Administrative Code.

EXHIBIT E

SITE SAFETY PLAN OUTLINE AND GUIDANCE FOR SITE ASSESSMENT OR SITE MITIGATION PROJECTS

Toxic Substances Control Division

This document is intended to assist contractors and responsible parties in preparing site safety plans (SSP's) for Toxic Substances Control Division projects. This guidance is not necessarily all-inclusive. The type of plan required and its content will vary on a minimum, all of the topics listed in the SSP Outline below; if a topic area does not relate to the project, a negative declaration should be included to establish that adequate consideration was given to the topic.

A well-written SSP should be a stand-alone document that serves a multitude of purposes. While assuring the governmental agencies involved that both worker and community health and safety concerns are properly addressed, it should also provide site management with information that is sufficiently detailed to permit implementation of all health and safety functions at the site. A reference copy of the SSP must always be available at the site for this purpose. The SSP must also provide site workers with appropriate health and safety guidance, and be useful for training the workers in the hazards specific to the particular job.

It is advisable to have the SSP developed by industrial hygiene and safety personnel who have hazardous waste site experience. A suggested reference for use in preparing SSP's is the NIOSH/OSHA/USCG/EPA "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities", October 1985, DHS (NIOSH) Publication No. 85-115.

I. SSP Outline

1. Facility Background
2. Key Personnel and Responsibilities
3. Job Hazard Analysis
4. Risk Assessment Summary
5. Air Monitoring Plan
6. Personal Protective Equipment
7. Work Zones and Security Measures
8. Decontamination Procedures
9. General Safe Work Practices
10. Emergency Response Plans
11. Training Requirements
12. Medical Surveillance Program
13. Documentation
14. Regulatory Requirements

II. Guidance Information

1. Facility Background

If the SSP is not an integral part of a workplan, this section of the SSP should be devoted to a description of the project, including field activities and goals. Further, it should include a summary of information regarding wastes, chemical characteristics of wastes, and range of concentrations found to date by matrix.

2. Key Personnel and Responsibilities

Identify key personnel by name and specific assignment for the project (i.e., Joe Smith, Project Manager, Harry Jones, Site Safety Officer, etc.). Summarize the health and safety responsibilities of each key person identified. Include the telephone numbers of key contractor/responsible party and agency personnel.

3. Job Hazard Analysis

This section is necessary to provide summary information on potential hazards to workers at the site. Describe potential chemical hazards based on contaminants present or expected, and the primary health risks associated with each; include PELs/TLVs for each containment as appropriate. Describe physical hazards associated with each site activity (i.e., trenching, drilling, sampling) and steps to be taken to minimize these hazards.

Provide anticipated weather conditions, including historic mean temperatures and relative humidities. If heat stress potential is indicated (ambient temp >70F), discuss its monitoring and control. In colder regions, give consideration to cold stress potential.

Where trenching or drilling will be conducted, ensure that Underground Service Alert (USA) is contacted for guidance regarding underground utilities. Article 6 of the Construction Safety Orders contains specific regulatory requirements for trenching operations.

Some large/prolonged/complex site mitigation projects will require a more detailed job hazard analysis for each job classification on the project.

4. Risk Assessment Summary

Provide a summary of the potential risks/impact on receptors at or near the site. This will include impact on workers, nearby/surrounding community, and environment. This section is a very dependent on the availability of data and specifics regarding the site; therefore, based on the phase of the project (i.e. initial site assessment) it may not be possible to include this information.

5. Air Monitoring Plan

Describe area, worker, and community air monitoring programs. This should include rationales, methodologies, equipment calibration procedures for each, and locations for area and community monitoring. Include decision matrices for action level determinations. Depending on the geographical location of the site, area and community monitoring of the site may not be applicable. If the operation require a local air quality agency permit which outlines community air monitoring criteria, provide a copy of the permit as an appendix.

6. Personal Protective Equipment (PPE)

Discuss protective clothing and respirator selection. This must be more specific than "chemical resistant" coveralls, gloves, etc., and should include rationale for selection.

For respirator use, include odor threshold of gases and vapors, vapor pressure, and PEL/TLV of each hazardous constituent of primary concern, as well as action levels for upgrade or downgrade.

The section should include a list of PPE selected for each job classification at the site if there are different levels of protection being specified.

7. Work Zones and Security Measures

Provide a site and area map with work, contamination reduction and support zones outlined. Indicate decontamination area. Define site control/security measures; these include items such as fencing, locked gates, security guards, flagging, etc.

8. Decontamination Procedures

This section will describe decontamination (decon) procedures to be used for personnel, personal protective equipment, sampling equipment, and heavy equipment. Detail the decon procedures, including how decon line and rest area

will be set up, provisions for disposal of contaminated materials and water, and a listing of decon equipment and solutions that will be used (i.e. soap and water, steam cleaner, etc.)

9. General Safe Work Practices

This section should establish Standard Operating Procedures (SOP's) for activities that can be standardized due to their repetitive nature. A checklist is advisable because it is useful in the field for daily checks of working conditions. If such safety SOP's are provided through a corporate health and safety program/manual, these can be referenced in the SSP, and a copy of the manual provided for review.

10. Emergency Response Plans

This is another section of the SSP which is very dependent on the specifics of the site and the phase of the project. At a minimum, it should describe medical and emergency services to be used, including a list of emergency contact telephone numbers and the route to the nearest emergency room. Personnel with current CPR/First Aid training need to be identified. Decontamination requirements for personnel injured or exposed in the work zone will be provided.

As applicable, based on the project, develop contingency plans for on-site and off-site spills or releases of hazardous materials which will include evacuation plans for site and surrounding areas.

11. Training Requirements

This section should describe personnel training programs, which should include as a minimum, health hazard recognition training, physical agent (safety) training, respiratory protection training, equipment training, safe work practices, first aid/CPR, and personal hygiene. Procedures for daily/pre-shift tailgate safety meetings should be discussed.

Cal/OSHA requires specialized training be given when handling specific materials, and that personnel are trained in the hazards specific to their job.

IF the details on such a training program are provided through a corporate health and safety program/manual, this can be referred to in the SSP, and a copy of the program or manual provided for review. The SSP should include training needs over and above the basic corporate program which are specific to the project.

12. Medical Surveillance Program

Any contractor/subcontractor who has employees working at hazardous waste sites should have an established medical surveillance program in place. At a minimum, the corporate program should include a determination that a worker can use respiratory protection devices; a determination of physical condition to withstand stresses such as heat stress; establish baseline conditions for hearing and visual acuity; blood tests and urinalysis; and provisions for follow-up/periodic examinations.

If such a program is included in the corporate health and safety program, it may be referenced as such in the SSP and a copy of the program submitted for review. However, appropriate tests or examinations for acute exposures to specific potential hazards from the work at hand should be discussed in this section of the SSP.

13. Documentation

There are many requirements in the Cal/OSHA health and safety regulations (CAC, Title 8) covering recordkeeping. Such items include worker exposure monitoring, medical surveillance, training, respiratory protection, and injuries/illnesses. Standard formats for these requirements should be established by the corporate health and safety program/manual. These can be referenced in the SSP, and a copy of the manual provided for review.

14. Regulatory Requirements

California Administrative Code, Title 8, General Industry Safety Orders sets out specific industrial hygiene, safety and medical monitoring requirements that are to be adhered to when working with designated hazardous materials. Frequently these procedures state that they do not apply to the construction industry. Cal-OSHA does not recognize hazardous waste site work as being in the construction industry; therefore, it is incumbent upon contractors/responsible parties to ensure that SSP's for site that contain any of these materials are in compliance with applicable regulations.

III. Resources

The TSCD staff includes industrial hygienists in each Regional Office who are available to assist in the development of SSP's. The primary responsibility for the SSP lies with the contractor/responsible party. However, the TSCD industrial hygienists are responsible for review and approval. prior to any site activities, of the SSP and

any other health and safety considerations for a specific project. Verbal communications between the parties preparing the SSP and TSCD industrial hygienists is encouraged as this usually results in more expeditious approval of the SSP, which will then decrease the waiting period before site activities can begin.

In terms of written materials, the EPA provides additional guidance documents regarding site safety and SSP development.

Contractors who are working directly for the TSCD should consult their contracts or task orders for items which may be required in an SSP over and above the basic requirements detailed in this document.

EXHIBIT F

COMMUNITY RELATIONS PLAN PREPARATION and OUTLINE FOR RESPONSIBLE PARTIES AND ZONE CONTRACTORS

1. The plan will be prepared on the basis of a file review, site visit and in-person community interviews. The following types of individuals should be considered for interviewing:

   a. Persons who have expressed interest in the site or may be directly affected by site problems (e.g. persons who have previously contacted DHS because of complaints about the site, nearby residents, property owners, etc.);

   b. Local and state elected officials, such as the mayor, council members, county supervisors or state legislators;

   c. Representatives of ad hoc citizen groups organized because of site issues;

   d. Local business representatives (e.g. Chamber of Commerce), civic groups, neighborhood associations and local chapters of national environmental groups that have expressed interest in the site;

   e. State or federal staff, such as environmental protection or natural resources department officials;

   f. Staff at Congressional or state legislators' district offices;

   g. County planning and health officials involved with the site.

2. Information obtained from these interviews will be used to develop the Community Relations Plan. The nature and level of citizen concern at the site will be evaluated by considering the presence or absence of the following six characteristics:

   a. Children's health--whether families in the community believe their children's health may be affected by hazardous substances;

   b. Economic loss--whether local homeowners or businesses believe that the site has caused or will cause them economic loss;

   c. Agency credibility--whether DHS's performance and statements are viewed by the public as competent and credible;

d. Involvement--whether an active, vocal group leader(s) has emerged from the community and whether the group leader has a substantial local followIng;

e. Media--whether events at the site have received substantial coverage by local, state, regional or national media;

f. Number affected--approximately how many households perceive themselves as affected by the site.

3. The DHS project manager or community relations coordinator must approve the list of persons to be interviewed and must be offered the opportunity to be present at any or all of the interviews. In contacting individuals, the Contractor must stress that the purpose of the interview is to assess the level and nature of community concerns so a community relations program appropriate to those concerns can be developed. Interviews should be conducted at the convenience of interviewees. Prior to the interviews, DHS will provide the Contractor with a list of interview questions to be asked during the discussions. These questions may include, but not be limited to the following:

a. When did you first become aware of the presence of hazardous substances at the site?

b. How would you characterize the problems at the site?

c. What are your major concerns related to the site?

d. What contacts have you had with local, state, federal and other officials about the site?

e. What activities have you participated in, sponsored or organized concerning the site?

f. How would you like to be involved in the cleanup process?

g. How can DHS best provide you with information concerning response activities? Would you like to be included on a mailing list?

h. What kind of information would be most useful to you (e.g. technical information or status reports on cleanup activities)? How frequently would you like to receive a progress report or fact sheet?

i. What local or regional media best cover the area? What coverage have they given the site?

j. Is there anything you wish to mention that we have not yet discussed?

k. Can you suggest other individuals or groups DHS should contact for additional information or to identify other types of concerns?

If several of these describe the affected community, it should be assumed that community involvement at the site is likely to be high.

4. A draft plan will be submitted to the DHS project manager or community relations coordinator within 40 working days of the effective date of this order/task order. A final plan, incorporating DHS' review comments, will be prepared within 10 working days of the receipt of the comments.

OUTLINE

A. Introduction (1 page). This section will include:

1. Purpose of the CRP;

2. Which agencies have oversight responsibilities;

3. How information was obtained (e.g. interviews, file review, etc.); note that a list of persons interviewed during plan preparation is included in Appendix A;

4. How the plan is structured.

B. Community relations background (3 to 7.pages). This section will include:

1. Site description, including maps (see attachment 1);

2. Site history or background (basic historical, geographical and technical detail necessary to understand why the site was listed on the state expenditure plan list;

a. Site location and proximity to community and geographic landmarks (e.g. homes, schools, playgrounds, businesses, lakes, streams);

b. History of site use and ownership;

c. Date and type of hazardous substance release(s);

d. Nature of threat to public health and the environment;

e. History of inspections and studies conducted at the site;

f. Current status.

3. History of community involvement
How the community has reacted to the site in the past

4. Potential issues and community concerns

C. Objectives of the Community Relations Program (1 page). This section will include objectives specific to community relations during the rem#dial response and special circumstances the plan will address.

D. Community Relations Techniques. This section will characterize the strategy for the community relations program at the site. Topics to be covered include:

1. Description of methods of communication or activities to be conducted;

2. Timing of these activities in relation to technical milestones; include a planning matrix at the end of this subsection (see item G and attachment 2); .

3. Responsibility for implementation of these activities (DHS, Contractors, PRP's, etc.);

4. Resources to be used in the community relations program (e.g. local organizations, meeting places);

5. Areas of special sensitivity that must be considered when conducting community relations and remedial activities.

E. Minimum Community Relations Requirements (California Health and Safety Code Section 25356.1). At a minimum, the following techniques are required:

1. Identify an information repository to provide public access to reports, fact sheets and other project documents;

2. Provide direct mail notification to contiguous property owners and affected local and state agencies of actions proposed in draft Remedial Action Plan (RAP);

3. Provide a 30-day public comment period on the RAP;

4. Publish notice of draft RAP availability for public review in a newspaper of general circulation in the area affected by the site;

5. Hold one or more public meetings on the draft RAP;

6. Post notices in the location of the proposed removal or remedy;

7. Revise the draft RAP based on public comment.

F. Staffing Plan and Budget. This section details the labor hours required for implementation of each activity by the responsible agency or organization and the expenses to be incurred. Expense estimates for travel, telephone, postage, reprographics, printing, display and placement, word processing and graphics supplies will be included.

G. Schedule. This will be a one-page matrix that relates timing of community relations activities to technical milestones for the site (see attachment 2).

H. Appendix A, Mailing List. The list will include names, titles, addresses and telephone numbers of all officials and group representatives contacted during the community interviews (indicated with asterisks*) and others who should receive regular information about site developments. Because the community relations plan is a public document, the telephone numbers and addresses of non-officials and non-affiliated individuals contacted for interviews will not be included as part of the plan that is made publicly available. The contact identified in the appendix should include the following:

1. Federal, state and local elected officials (include county and city or township);

2. Environmental and citizens groups;

3. DHS officials (include all departments involved in the remedial process, e.g. Sanitary Engineering Branch, Epi Studies, Community Relations);

4. Local, state and federal environmental officials

5. Local health department

6. Press contacts (newspapers, radio television)

I. Appendix B, Meeting Locations and Information Repositories. This appendix will identify suitable locations for holding public meetings and making public information easily accessible to community members. Repository hours and contact names for both repositories and meeting places should also be included.